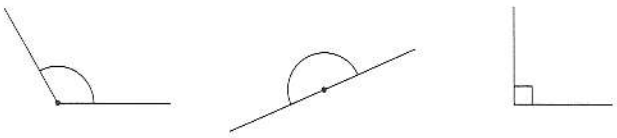
68 Angles in Polygons

A What's in a Name?

An acute angle is between 0° and 90°. A right angle is 90°.
An obtuse angle is between 90° and 180°. A straight angle is 180°.
A reflex angle is between 180° and 360°.

1 Name these angles.



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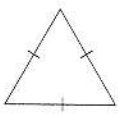
2 Unscramble the names for these triangles.

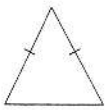
a)



requelatail

.....

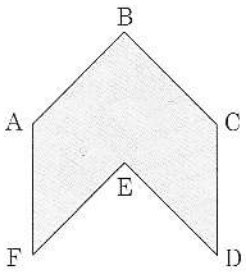
b)



celesosis

.....

3



Shape ABCDEF is a hexagon.

a) Why is it not a *regular* hexagon?

.....

.....

.....

b) List the angles inside the hexagon which are . . .

obtuse .....

acute .....

right .....

reflex .....

c) Name pairs of parallel sides. ..... and .....;

.....

B Does it Exist?

1 Draw the following shapes if possible. If you think the shape does not exist, say so.

a) Draw an isosceles, right-angled triangle (a triangle which is isosceles as well as right-angled).

b) Draw an equilateral right-angled triangle.

c) Draw a quadrilateral with 1 reflex, 1 obtuse and 2 acute angles.

d) Draw a quadrilateral with 3 right angles and 1 obtuse angle.

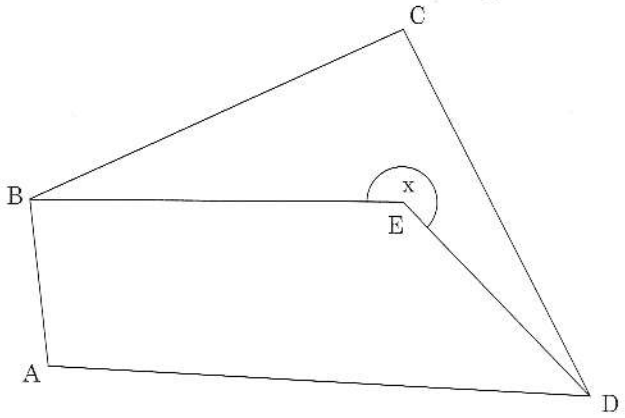
e) Draw a pentagon with at least 3 right angles.

f) Draw a hexagon with 3 acute and 3 reflex angles.

a)	b)
c)	d)
e)	f)

A Using a Protractor

1 Complete the table by first estimating the size of the angles, then measuring to the nearest degree.



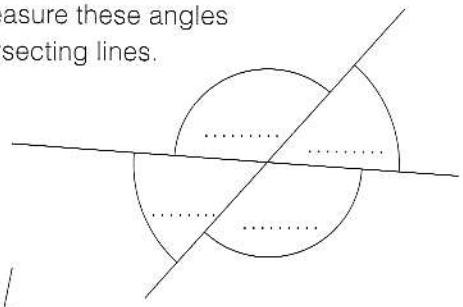
angle	estimate	measurement
∠BAD	.....	.....
∠BCD	.....	.....
∠CDE	.....	.....
∠ADE	.....	.....

2 Find the size of the reflex angle x.

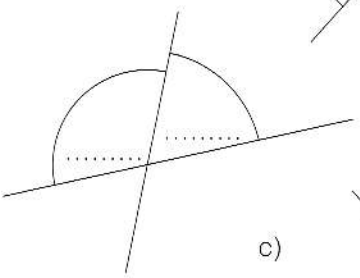
.....

3 Accurately measure these angles made by intersecting lines.

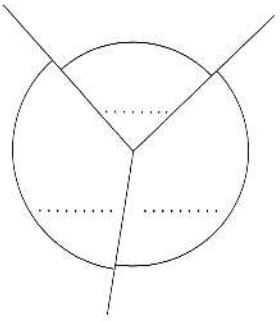
a)



b)



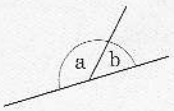
c)



B Using Angle Rules

Angle Rule 1

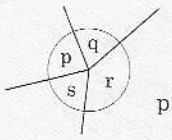
Angles on a straight line add to 180°



a + b = 180°

Angle Rule 2

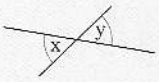
Angles around a point add to 360°



p + q + r + s = 360°

Angle Rule 3

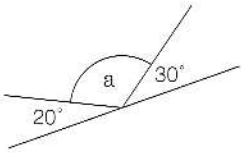
Vertically opposite angles are equal.

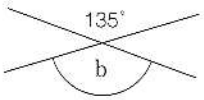


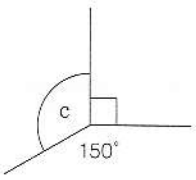
x = y

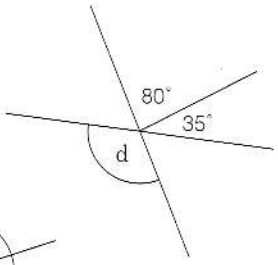
1 These diagrams are sketches. You cannot use your protractor to measure the angles. Use angle rules to find the sizes of angles a to e.

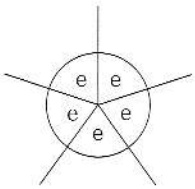
State the rule you used : 1, 2 or 3.





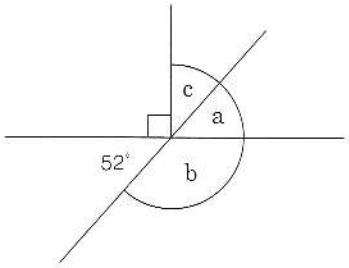






angle	a	b	c	d	e
size					
rule					

2 This diagram is a sketch. Calculate angles a, b and c.



a = ...°

b = ...°

c = ...°